Submittals

Energy Management Automation
System Base
MCPS, EMS Main
8900
Shady Grove Maint. Depot/PLAR Office -
16651 Crabbs Maint. Depot/PLAR Office -
16651 Crabbs Branch Wat
Rockville MD 20855-

SUBMITTAL DATE: 12/04/2012
DATE OF PLANS & SPECIFICATION: 12/04/2012
MECHANICAL ENGINEER: None

MECHANICAL CONTRACTOR: Board of Education of Montgomery County
Division of Procurement
45 West Gude Dr., Suite 3100
Rockville MD 20850-

OWNER	ARCHITECT	GENERAL CONTRACTOR
Shady Grove Maint. Depot/PLAR Office - Energy Mgmt 16651 Crabbs Branch Way 45 West Gude Drive, Suite 3100 Rockville MD 20855- ( ) - ( ) -	None	None

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TABLE OF CONTENTS

SECTION	1	Submittal Schedule
SECTION	2	Request for Information
SECTION	3	Sequence of Operation
SECTION	4	Bills of Materials
SECTION	5	Software
SECTION	6	Network Gear
SECTION	7	Control Drawings

P.O. Box 1493, Newington, VA 22122-1493 7964-B Conell Court, Lorton, VA, 22079, - Phone: (703) 550-0900 - Fax: (703) 550-0900

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SECTION 1 Submittal Schedule

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Building Automation Services, Inc.

Montgomery County Public Schools EMS/DDC Submittal Schedule

Section	Section 1
Sheet Title	Submittal Schedule

Sub-Section	**Description**
	List of Submittal Documents

Sheet Data

	Submittal Description	**Submitted**	*Date*	**Approved**	*Date*
1	MCPS, DDC Naming Convention	Yes	12/03/12		
2	MCPS, EMS Main (BAS #8900)	Attached	12/04/12		
3	MCPS, Resnick Preliminary Survey	No			
4	MCPS, Resnick Controls Submittal (BAS #4576)	No			
5	MCPS, Roberto Clemente Preliminary Survey	No			
6	MCPS, Roberto Clemente Controls Submittal (BAS #4578)	No			
7	MCPS, Rockwell Preliminary Survey	No			
8	MCPS, Rockwell Controls Submittal (BAS #4577)	No			

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SECTION 2 Request for Information

Building Automation Services, Inc.

REQUEST FOR INFORMATION

RFI # 1

1st Request

Date: 12.04.12

To: William Butler

From: Jeremy V. Fleming

Project: MCPS, EMS Main
BAS # 8900

Subject: General Information Request

Response required by:
Specification Section Reference
Drawing Reference

Question

The following will need to be provided to configure Control System Server (CSS) prior to installation.

1. Please provide Administrator Username and Password you would like the server setup with.
2. Please provide Static IP Address for the Server
3. Please provide exact location to install server: Building Address, Building Number, Room Number.
4. Please provide a desk, chair, 120V Three Prong wall outlet within 6 feet of desk, and a Network connection outlet that can receive a standard CAT5e cable connection (RJ-45)
5. Please provide a dedicated Fax/Phone line for testing modem connectivity. This line will be relinquished upon test completion. Each school will require this when the time comes.
6. Please provide MCPS IT services at time of installation to connect the Control System Server to the MCPS Network.
7. Please provide a written list of individuals that will have access to the server so we can provide username and password information for these users to access DDC Software. Along with this user list, please provide access level as follows:
    a. Administrator – Level 0
    b. View and Operate – Level 2
    c. View Only – Level 6

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Note that prompt response to this request for information is required in order for us to maintain continuity in progress on our contract. Failure to respond or response not in a timely, complete or adequate manner could result in a delay in submission, material delivery and/or work progress. Building Automation Services, Inc. will not be responsible for any damages that result from late, incomplete or inadequate response.

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Submittals

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SECTION 3 Sequence of Operation

Building Automation Services, Inc.

SEQUENCE of OPERATION
MCPS, EMS Base of Operation
BAS Job # 8900

SECTION 1 Control System Server (CSS)

1.1 HARDWARE

A. A server class computer will be installed at a provided location at:
   a. Shady Grove Maintenance Depot/PLAR Office – Energy Management, 16651 Crabbs Branch Way, Rockville, MD 20855
B. The server operating system will be Windows Server 2012 Standard Edition
C. The server will include a 24" monitor, stereo speakers, mouse, and keyboard
D. Once the server is installed on site the responsibility of maintaining the computer will transfer to the MCPS IT Department. Note that Updates to the Operating system can have an impact on the installed DDC Software. All Operating System updates should be discussed with the control contractor prior to implementing.
E. Hardware warranty does not start until the system is accepted so access to the system will be limited and supervised by the responsible Energy Management Department personnel.

1.2 HARDWARE CONFIGURATION

A. The server will be initially setup with software required to operate the Energy Management system by the control contractor prior to arriving on site.
B. Connecting the server to the MCPS network will be the responsibility of the MCPS IT Department.

1.3 SOFTWARE

A. The server will be provided with all the software required to operate the DDC System
B. Included Software Applications
   a. Reliable Controls RC-Archive 3.0 will be installed on the server and will include Microsoft SQL 2008 Express.
   b. Reliable Controls RC-Studio 2.0 will be installed on the server.
   c. Microsoft Office Home and Business 2010 software will be installed on the server.
   d. Adobe Acrobat Reader will be installed on the server
C. Virus protection Software will be the responsibility of the MCPS IT Department.
D. Printers
   a. Drivers and software provided with printer will be installed. The printer will be local use to the server only and not connected to the network for network usage.
E. Third-Party Software can be installed at the discretion of the MCPS IT Department and will not be the responsibility of the control contractor.

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1.4 TESTING ENVIRONMENT

1. The Control System Server will be configured to run in a live Demonstration DDC environment prior to being configured to operate an actual school system. This demonstration environment will be designed to test and operate the following:
   a. Test and operate all required connectivity methods through the established MCPS network.
   b. Test and operate a live DDC system in demo format that will be supplied by the control contractor. This "Demo Case" will be returned to the Control Contractor upon satisfactorily completing all testing.
   c. View, Review, and test top level graphical navigation.
   d. View, Review, and test system graphical navigation and operation.

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SECTION 4 Bills of Materials

Shady Grove Maint. Depot/PLAR Office -
16651 Crabbs Maint. Depot/PLAR Office -
16651 Crabbs Branch Wat
Rockville MD 20855-

Bill of Materials

Submittals Energy Management Automation System Base
MCPS, EMS Main
8900

Solution Abbreviation : NA 1 of 1 Solution Name : Network Architecture

DW Abbr	Qty.	Part No.	Part Description	Power	Range	SW Configr.	Manufacturer	Accessories	Notes
DISPLAY	1	VH242H	Computer Monitor, 24" Widescreen	Not Rqrd	No Range	No SW Config	Asus	No Acc.	No Installation Notes
PRINTER	1	C88+	Printer, Color Inkjet	Not Rqrd	No Range	No SW Config	Epson	No Acc.	No Installation Notes
SERVER	1	T110 II	Server, Poweredge T110 II, Win Server 2008 R2	Not Rqrd	No Range	No SW Config	Dell	No Acc.	No Installation Notes
SW-ARCHIVE	1	RC-AR3-S5000	RC-Archive 3.0 Software, Unlimited Archives, Soft license (no USB Key)	Not Rqrd	No Range	No SW Config	Reliable Controls Corp.	RC-AR3-M (1)	Software shall be installed and configured for operation on SERVER. Includes (1) hardcopy user manual.
SW-STUDIO	1	RC-ST2-1	RC-Studio 2.0 Software - Single User License	Not Rqrd	No Pnt Lmt	No SW Config	Reliable Controls Corp.	RC-ST2-M (1)	Software shall be installed and configured for operation on SERVER. Includes (1) hardcopy user manual.
UPS	1	CP1500AVRT	UPS, 1500W	Not Rqrd	No Range	No SW Config	Cyber Power	No Acc.	No Installation Notes

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SECTION 5 Software

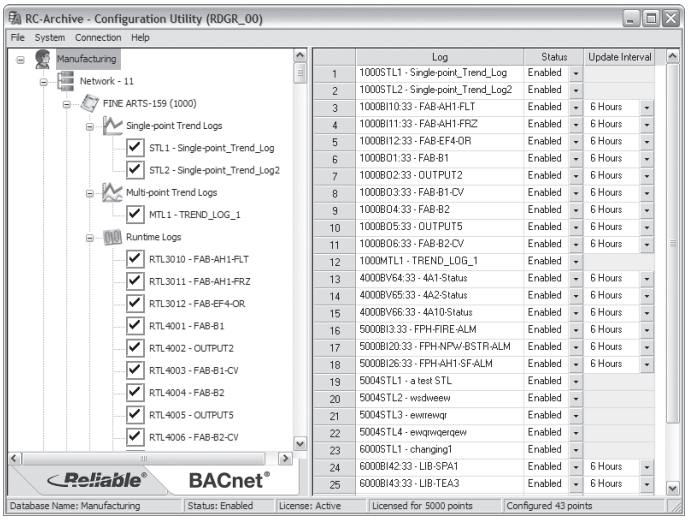
	RC-AR3-S5000	SW-ARCHIVE	RC-Archive 3.0 Software, Unlimited Archives, Soft license (no USB Key)	Reliable Controls Corp.	5
RCST2 Operator Workstation Software	RC-ST2-1	SW-STUDIO	RC-Studio 2.0 Software - Single User License	Reliable Controls Corp.	5

SUBMITTAL
RC-Archive™

RELIABLE CONTROLS® MACH-SYSTEM

Continuously downloading mechanical and electrical system logs into an industry standard SQL database, RC-Archive™ delivers a robust record of performance from any Internet-connected BACnet® facility. RC-Archive™ empowers facility managers to flag important trend and runtime data from their BACnet® building controllers, and have the data automatically stored onto a secure *Microsoft SQL* server. The archived logs can be accessed, viewed, graphed, printed, and exported to *Microsoft Excel* using Reliable Controls® RC-Studio®, or using a browser with RC-Reporter™, RC-WebView™ or the MACH-ProWeb™ controller. Third-party business intelligence tools such as *Crystal Reports* can also be used to access RC-Archive™ database tables. System administrators will appreciate the convenience of the RC-Archive™ license structure and its flexibility to configure email event notifications for an SMTP recipient list.

SCREEN CAPTURES

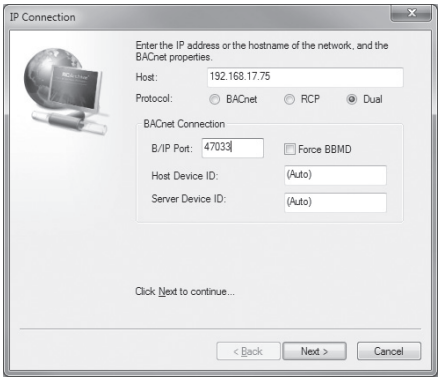


BACnet View

TECHNICAL SPECIFICATIONS

Recommended Server Requirements

- Intel Core i5, 3GHz PC
- 4 GB RAM
- 10 GB hard disk space free, or higher, appropriate for archiving needs
- CD-ROM drive or Internet connection for software installation
- Network Interface Card (NIC) for Ethernet communications
- *Windows 2008 Server R2 / Windows 7*
- *Microsoft SQL Server 2008 R2 Workgroup Edition/SQL Server 2012 Standard Edition* (purchased separately for databases exceeding the 10 GB SQL Express database size limitation)
- Dedicated USB 2.0 port for RC-KEY licensing (soft license optional)
- Ensure IT management processes do not allow SQL database size limitations to be exceeded



IP Connection to any BACnet® or RCP facility

Project:	
Engineer:	
Approved by:	

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PRODUCT FEATURES

BACnet Support
- Archives BACnet Single-point Trend Log, BACnet Multipoint Trend Log and BACnet Runtime Log objects
- Archives Trend Log objects from any IP connected third-party BACnet system

RCP Support
- Archives RCP Trend and Runtime Logs

Easy Setup
- Wizards guide the operator to provide easy setup
- Intuitive data table names created
- Simple to archive all Trend Logs and Runtime Logs in a system, network, or controller
- Enable All feature allows convenient filtering by point type and interval length
- Browse through multiple controllers and create archives from multiple buildings or systems
- *Microsoft SQL Server 2008 R2 Express Edition* included with software

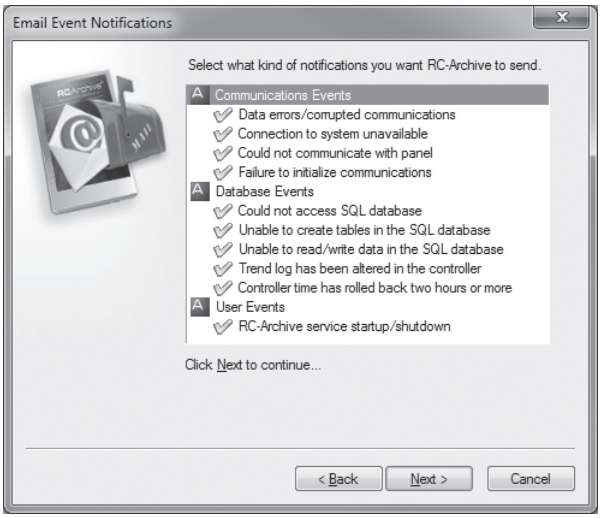
Rigorous Logging
- Efficient log file structure
- Continues to log data to file system while SQL database unavailable
- Multiple simultaneous instances supported

Graphing
- Requires RC-Studio®, or a browser with RC-Reporter™, RC-WebView™ access, or a MACH-ProWeb™ controller
- Graphing with zoom, pan, and paging capabilities
- Simultaneously graph archive data with real-time data

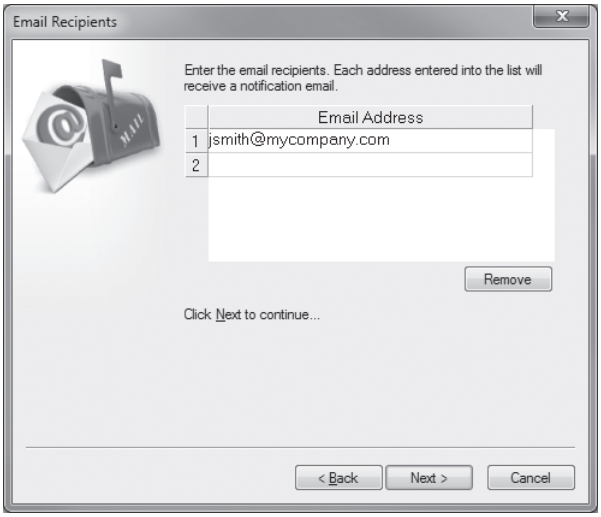
Exporting
- Export to *Microsoft Excel*
- Standard SQL database accessible by third-party applications

Automation
- RC-Archive™ will log data without user intervention
- Runs as a *Microsoft Windows* service
- Archive size only limited by SQL license and hard disk space
- Broadcast server status notifications to user-defined email recipient list using SMTP

Certification
- BTL listed (B-Oth)


Email Event Notifications
Select what kind of notifications you want RC-Archive to send.
Communications Events
Data errors/corrupted communications
Connection to system unavailable
Could not communicate with panel
Failure to initialize communications
Database Events
Could not access SQL database
Unable to create tables in the SQL database
Unable to read/write data in the SQL database
Trend log has been altered in the controller
Controller time has rolled back two hours or more
User Events
RC-Archive service startup/shutdown
Click Next to continue...
< Back
Next >
Cancel

Email Event Notifications sent to user-defined recipient list



Email Recipients

ORDERING

RC-AR3-200
- License allowing 200 points to be archived c/w RC-KEY (USB Software Key)

RC-AR3-200A
- Adds 200 points to existing license (must have previously purchased RC-AR3-200)
- Upon purchase of the 24th unit of RC-AR3-200A, the license is tagged as a site license, equivalent to RC-AR3-5000

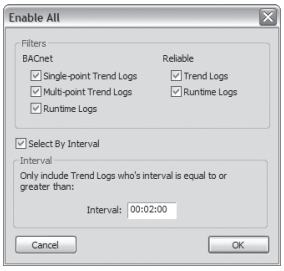
RC-AR3-5000
- Site license allowing unrestricted number of points to be archived c/w RC-KEY (USB Software Key)

RC-AR3-S200
- License allowing 200 points to be archived c/w soft license (no USB Key required)

RC-AR3-S200A
- Adds 200 points to existing soft license (must have previously purchased RC-AR3-S200)
- Upon purchase of the 24th unit of RC-AR3-S200A, the license is tagged as a site license, equivalent to RC-AR3-S5000

RC-AR3-S5000
- Site license allowing unrestricted number of points to be archived c/w soft license (no USB Key required)

RC-AR3-M
- RC-Archive software manual



Enable All option

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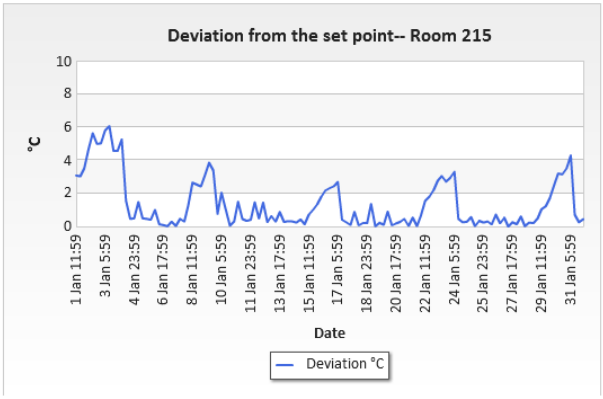
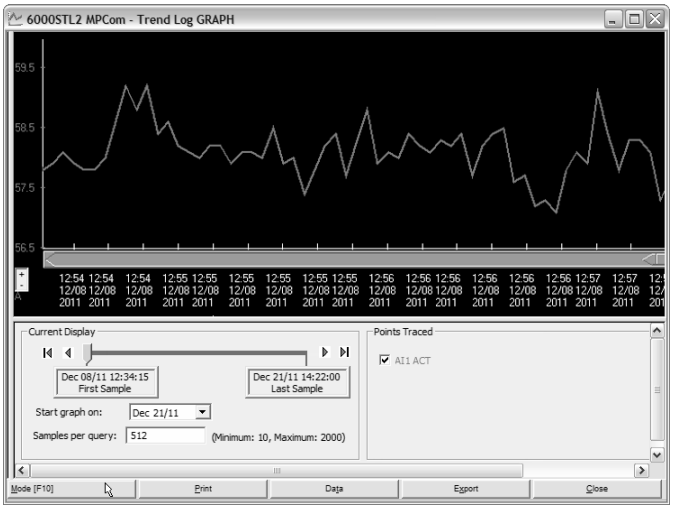
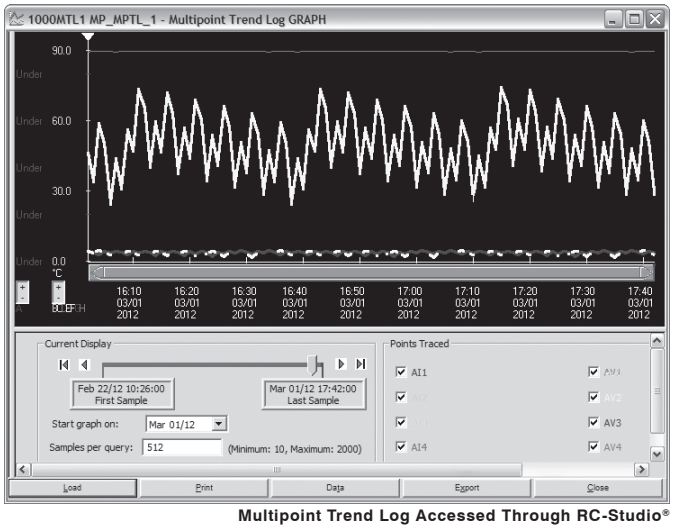


Date	Deviation °C
1 Jan 11:59	3.08
1 Jan 17:59	3.03
1 Jan 23:59	3.52
2 Jan 5:59	4.66
2 Jan 11:59	5.62
2 Jan 17:59	4.98
2 Jan 23:59	5.02
3 Jan 5:59	5.80
3 Jan 11:59	6.06
3 Jan 17:59	4.55
3 Jan 23:59	4.56
4 Jan 5:59	5.25
4 Jan 11:59	1.57
4 Jan 17:59	0.46

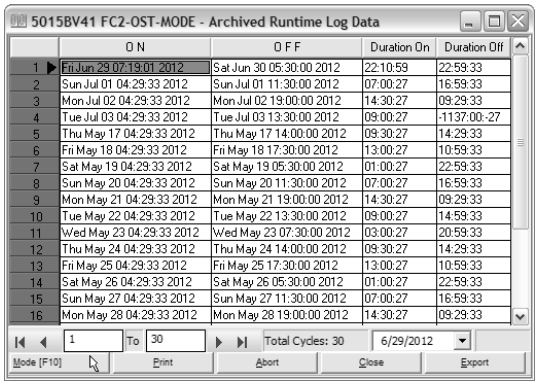
Trendlog data viewed by Data Range Component in RC-Reporter™



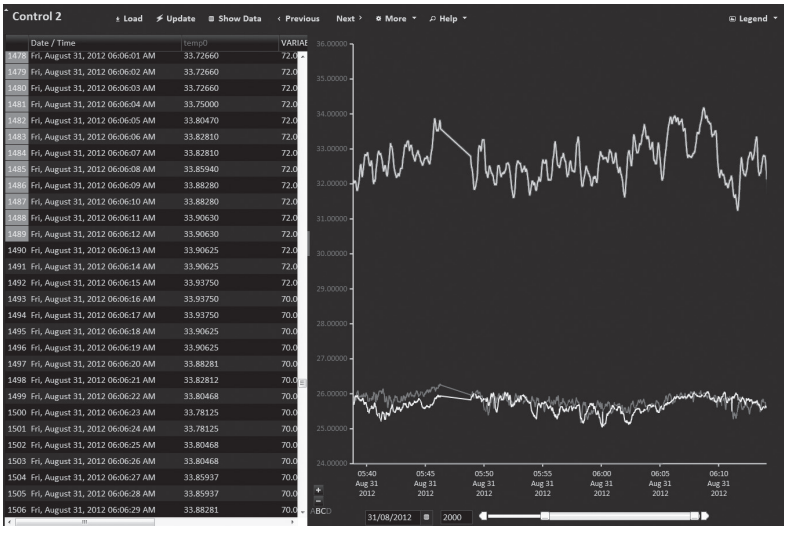
Single-point Trend Log Accessed Through RC-Studio®



Multipoint Trend Log Accessed Through RC-Studio®



Archived Runtime Data



Trendlog accessed through MACH-ProWeb™ controller

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BACnet® Protocol Implementation Conformance Statement

Model #	Product Name
RC-A3	RC-Archive™ 3.0*

* Protocol Revision 135-2010, Software Version 3.0

BACnet Standardized Device Profile

Product	Device Profile
RC-Archive™ 3.0	Other BACnet Devices (B-Oth)

Segmentation Capability

Segmentation	Supported	Window Size
Able to transmit segmented messages	Yes	1
Able to receive segmented messages	Yes	1

Data Link Layer Options

Data Link	Options
BACnet/IP	Able to register as Foreign Device

Supported BIBBs

Supported BIBBs	BIBB Name
DS-RP-A	Data Sharing - ReadProperty - A
DS-RP-B	Data Sharing - ReadProperty - B
DS-RPM-A	Data Sharing - ReadPropertyMultiple - A
DS-RPM-B	Data Sharing - ReadPropertyMultiple - B
DS-WP-A	Data Sharing - WriteProperty - A
DM-DDB-A	Device Management - Dynamic Device Binding - A
DM-DDB-B	Device Management - Dynamic Device Binding - B
DM-DOB-B	Device Management - Dynamic Object Binding - B
T-ATR-A	Trending - Automated Trend Retrieval - A
T-AMVR-A	Trending - Automated Multiple Value Retrieval - A
T-A-A	Trending - Archival - A

Character Sets

Character Sets supported	ISO 10646 (UTF-8)

Supported Standard Object Types

Object Type	Dynamic Creation	Dynamic Deletion	Optional Supported Properties	Write Properties	Proprietary Properties
Device	No	No	Max_Segments_Accepted, APDU_Segment_Timeout	None	None

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SUBMITTAL
RC-Studio® 2.0

RELIABLE CONTROLS® MACH-SYSTEM

Recognized as the ultimate all-in-one BACnet Operator Workstation (B-OWS), RC-Studio® 2.0 from Reliable Controls® provides outstanding functionality, value, and ease of programming. Compatible with *Windows 2003*, and higher, RC-Studio® 2.0 provides efficient BACnet® object discovery, drag and drop programmability, and intuitive object creation and manipulation. Programmers have the freedom to automatically discover BACnet devices, cut and paste sequence of operations, trend building energy and comfort performance, and link interactive and empowering professional-looking graphics.

Reliable controls
...people and technology you can rely on™
RC Studio® 2.0
BACnet® Operator's Workstation Software
Reliable Controls® MACH-System
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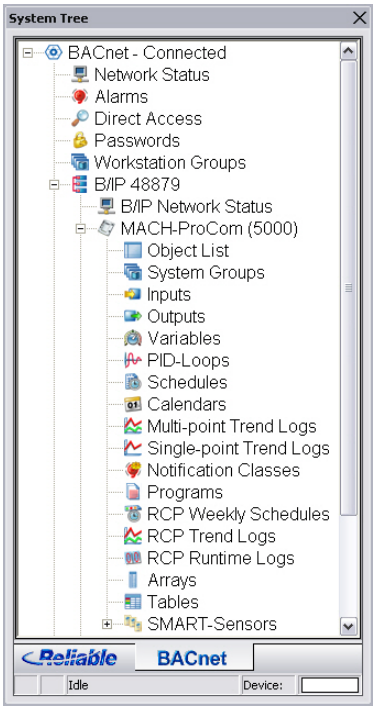
SCREEN CAPTURES



System Tree

TECHNICAL SPECIFICATIONS

Recommended Workstation Requirements

- Intel P4, 2.4 GHz PC
- 3 GB hard disk space
- CD-ROM drive
- 1 GB RAM
- SVGA monitor (greater than 1024 x 768 resolution)
- EIA-232 com port (for direct communication)
- Network Interface Card (NIC) for Ethernet communications
- Windows 2003 and higher

Project:	
Engineer:	
Approved by:	

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PRODUCT FEATURES

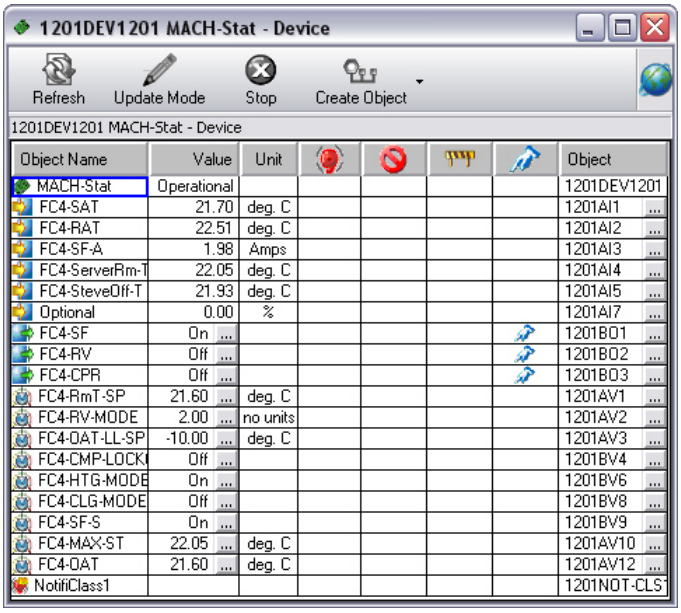
Freedom to Program
- Automatic BACnet® discovery
- Drag and drop BACnet® objects
- Full priority array control
- Intuitive database worksheets
- Cut and paste program code

Full-Featured Programmability
- Inputs, Outputs, Variables
- Schedule, Calendar
- Runtime Logs, Trend Logs
- Control-BASIC Editor for program coding
- System Group Editor for annotation and linking professional-looking graphics
- Alarm programming with priorities

Simulator
- Program an entire system offline using the simulator
- Programs can be written completely offline without the need of controller hardware

Graphic Support
- Supports BMP, GIF, TIFF, JPG, EMF, PNG, SWF, and DIB
- Flash animation graphics
- Supports VGA/SVGA/ULTRAVGA resolutions
- Hyperlink support to URLs

Network Management
- Alarm monitoring and annunciation to screen, email, and printer
- Wildcard searching and report generating
- Automated network backup



Object Name	Value	Unit	Object
MACH-Stat	Operational		1201DEV1201
FC4-SAT	21.70	deg. C	1201AI1
FC4-RAT	22.51	deg. C	1201AI2
FC4-SF-A	1.98	Amps	1201AI3
FC4-ServerRm-T	22.05	deg. C	1201AI4
FC4-SteveOff-T	21.93	deg. C	1201AI5
Optional	0.00	%	1201AI7
FC4-SF	On		1201BO1
FC4-RV	Off		1201BO2
FC4-CPR	Off		1201BO3
FC4-RmT-SP	21.60	deg. C	1201AV1
FC4-RV-MODE	2.00	no units	1201AV2
FC4-OAT-LL-SP	-10.00	deg. C	1201AV3
FC4-CMP-LOCK	Off		1201BV4
FC4-HTG-MODE	On		1201BV6
FC4-CLG-MODE	Off		1201BV8
FC4-SF-S	On		1201BV9
FC4-MAX-ST	22.05	deg. C	1201AV10
FC4-OAT	21.60	deg. C	1201AV12
NotifiClass1			1201NOT-CLS1

Device Object List

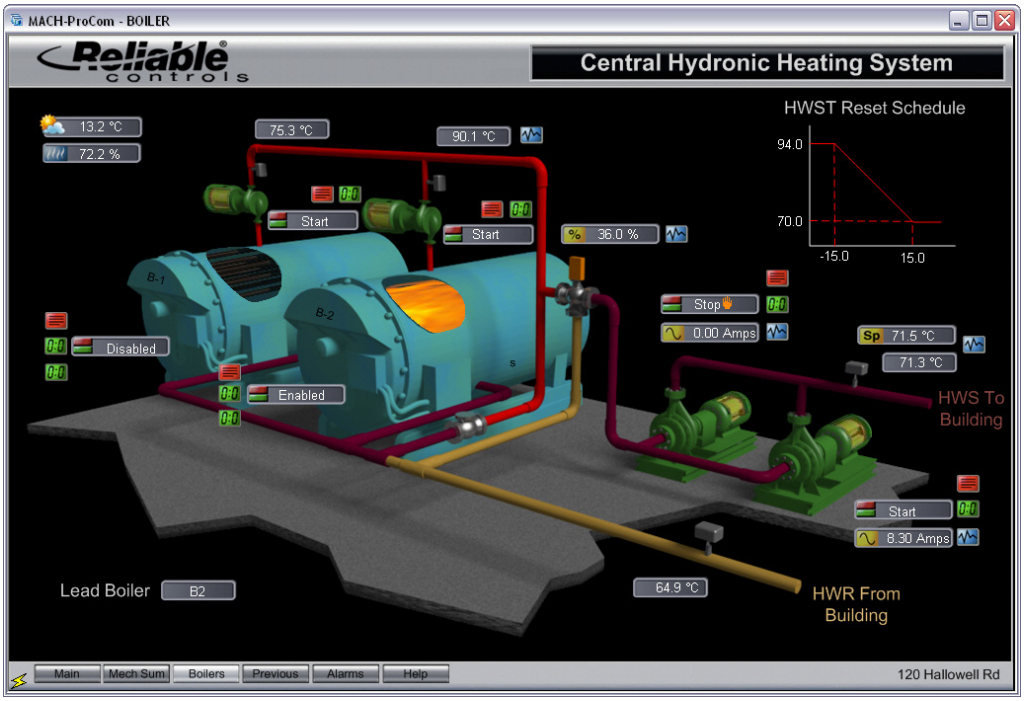
ORDERING

RC-ST2-1
- Single user license

RC-ST2-5
- Five user license

RC-ST2-A
- Additional user license

RC-ST2-M
- RC-Studio® 2.0 Software Manual



System Group graphic drawn using GrafxSet 2.0 Image Library

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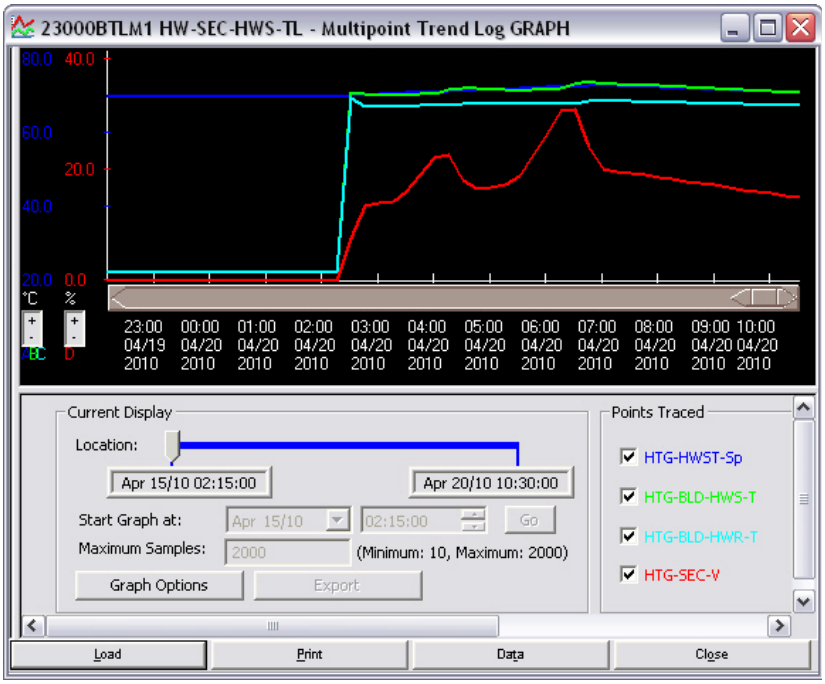
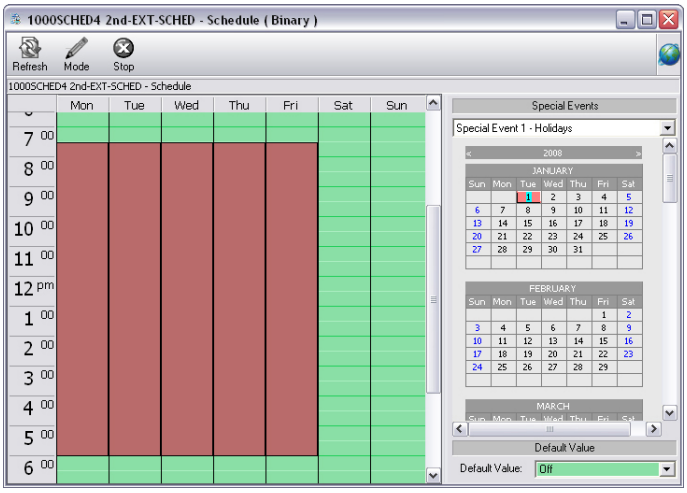
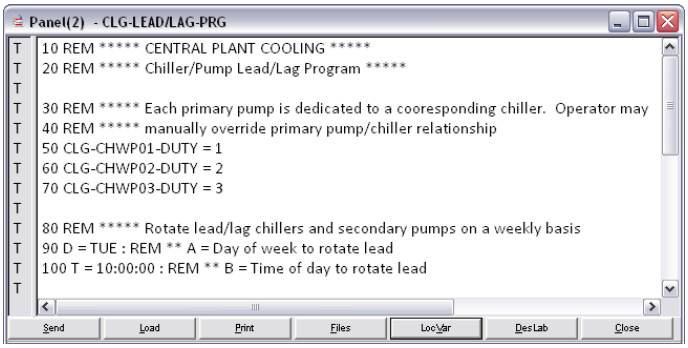


Trend Log



Schedule


Panel(2) - CLG-LEAD/LAG-PRG
10 REM ***** CENTRAL PLANT COOLING *****
20 REM ***** Chiller/Pump Lead/Lag Program *****
30 REM ***** Each primary pump is dedicated to a cooresponding chiller. Operator may
40 REM ***** manually override primary pump/chiller relationship
50 CLG-CHWP01-DUTY = 1
60 CLG-CHWP02-DUTY = 2
70 CLG-CHWP03-DUTY = 3
80 REM ***** Rotate lead/lag chillers and secondary pumps on a weekly basis
90 D = TUE : REM ** A = Day of week to rotate lead
100 T = 10:00:00 : REM ** B = Time of day to rotate lead
Send
Load
Print
Files
LocVar
DesLab
Close

Program Code

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BACnet® Protocol Implementation Conformance Statement

Model #	Product Name
RC-ST2	RC-Studio® 2.0*

* Protocol Revision 135-2008, Software Version 2.0

BACnet Standardized Device Profile

Product	Device Profile
RC-Studio® 2.0	BACnet Operator Workstation (B-OWS)

Segmentation Capability

Segmentation	Supported	Window Size
Able to transmit segmented messages	Yes	1
Able to receive segmented messages	Yes	1

Data Link Layer Options

Data Link	Options
BACnet/IP	Able to register as a Foreign Device
Point-To-Point	9600, 19200, 38400, 57600, 115200

Supported BIBBs

Supported BIBBs	BIBB Name
DS-RP-A	Data Sharing - ReadProperty - A
DS-RP-B	Data Sharing - ReadProperty - B
DS-RPM-A	Data Sharing - ReadPropertyMultiple - A
DS-RPM-B	Data Sharing - ReadPropertyMultiple - B
DS-WP-A	Data Sharing - WriteProperty - A
DS-WPM-A	Data Sharing - WritePropertyMultiple - A
DS-V-A	Data Sharing - View - A
DS-M-A	Data Sharing - Modify - A
DS-COV-A	Data Sharing - COV - A
AE-N-A	Alarm and Event - Notification - A
AE-ACK-A	Alarm and Event - ACK - A
AE-AS-A	Alarm and Event - Alarm Summary View - A
AE-VM-A	Alarm and Event - View and Modify - A
AE-VN-A	Alarm and Event - View Notifications - A
SCH-VM-A	Scheduling - View and Modify - A
SCH-AVM-A	Scheduling - Advanced View and Modify - A
SCH-WS-A	Scheduling - Weekly Schedule - A
T-V-A	Trending - Viewing - A
DM-DDB-A	Device Management - Dynamic Device Binding - A
DM-DDB-B	Device Management - Dynamic Device Binding - B
DM-ANM-A	Device Management - Automatic Network Mapping - A
DM-ADM-A	Device Management - Automatic Device Mapping - A
DM-DOB-B	Device Management - Dynamic Object Binding - B
DM-DCC-A	Device Management - Device Communication Control - A
DM-MTS-A	Device Management - Manual Time Synchronization - A
DM-OCD-A	Device Management - Object Creation and Deletion - A
DM-RD-A	Device Management - Reinitialize Device - A

Character Sets

Character Sets supported	ANSI X3.4

Device Address Binding

Static Binding Supported	No

Supported Standard Object Types

Object Type	Dynamic Creation	Dynamic Deletion	Optional Supported Properties	Write Properties
Device	No	No	Max_Segments_Accepted, Description, Local_Time, Local_Date, APDU_Segment_Timeout	

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Submittals

Energy Management Automation
System Base
MCPS, EMS Main

8900
Shady Grove Maint. Depot/PLAR Office -
16651 Crabbs Maint. Depot/PLAR Office -
16651 Crabbs Branch Wat
Rockville MD 20855-

SECTION 6 Network Gear

C88+	PRINTER	Printer, Color Inkjet	Epson	6
CP1500AVRT	UPS	UPS, 1500W	Cyber Power	6
T110 II	SERVER	Server, Poweredge T110 II, Win Server 2008 R2	Dell	6
VH242H	DISPLAY	Computer Monitor, 24" Widescreen	Asus	6

EPSON STYLUS C88+

Print

Printing Technology: CMYK drop-on-demand Micro Piezo® inkjet technology; Optimized for plain paper printing

Nozzle Configuration:

- Monochrome head 180 nozzles
- Color head 59 nozzles x 3 (CMY)

Minimum Ink Droplet Size: Variable: Three sizes, as small as 3 picoliters

Maximum Print Resolution: 5760 x 1440 optimized dpi

Maximum Printable Area: 8.5" x 44"

Print Speed:

- Black: 23 ppm[1]
- Color: 14 ppm[1]

Paper Handling

Paper Sizes: Letter, legal, A4, B5, A5, A6, half letter, executive, user definable (3.5" – 44" in length); borderfree printing on 4" x 6", 5" x 7", 8" x 10", letter (8.5" x 11")

Maximum Paper Width: 8.5"

Maximum Paper Thickness: 0.27 mm

Borderless Sizes: 4" x 6", 5" x 7", 8" x 10", 8.5" x 11

Paper Types:

- Epson Premium Bright White Paper
- Ultra Premium Photo Paper Glossy
- Premium Photo Paper Glossy
- Photo Paper Glossy
- Premium Photo Paper Semigloss
- Epson Premium Presentation Paper Matte
- Premium Presentation Paper Matte Double-Sided
- Presentation Paper Matte

Envelope Types:

- Standard (No. 10)
- Bond
- Air mail paper

Input Paper Tray Capacity: 120 sheets, 15 envelopes

Ink

Ink Type: DURABrite® Ultra pigment ink (smudge, fade and water resistant, highlighter friendly)

Ink Palette: Cyan, Magenta, Yellow and Black

Ink Cartridge Configuration: 4 individual ink cartridges

Replacement Ink Cartridges:

- Standard-capacity Black (T060120)

- Standard-capacity Cyan (T060220)
- Standard-capacity Yellow (T060320)
- Standard-capacity Magenta (T060420)

See Note[2]

Ink Yield Information:

Epson provides ink cartridge yields based on the ISO / IEC 24711 and 24712 standard for inkjet products, which excludes the first installed cartridges.

- Standard-capacity Black (T060120): About 400 pages
- Standard-capacity Cyan, Magenta, and Yellow (T060220, T060320, T060420): About 600 pages per color

Connectivity

Interface: USB 2.0 compatible, Parallel (IEEE 1284)

General

Operating Systems:

- Windows USB / Parallel, Windows 98se, Me, 2000 or XP;
- Macintosh USB - Macintosh OS X 10.2 or later; Intel Core Duo 10.4.x

Color Management: Standard, EPSON Vivid Color, Color Controls, PhotoEnhance, ICM

Temperature:

Operating

- 50° to 95° F (10° to 35° C)

Storage

- -4° to 140° F (-20° to 60° C);

Humidity:

Operating

- 20% to 80% relative humidity

Storage

- 5% to 85% relative humidity (no condensation)

Sound Level: 42 dB(A)

Rated Voltage: AC 100 – 120 V

Rated Frequency: 50 – 60 Hz

Rated Current: 0.4A (max 0.4A)

Power Consumption:

- Normal mode: Approx. 19W (WISO 10561)
- Sleep mode: Approx. 2.5W
- Power off mode: Approx. 0.8W

Safety Standards: UL1950, CSA 22.2 No. 950; FCC part 15 subpart B class B, CSA C108.8 class B

Case Color: Silver and dark gray

Dimensions: 18.11" x 17.2" x 12.2" (W x D x H) — with trays extended

Weight: 10.14 lb

Software Included: Epson Printer driver, ArcSoft PhotoImpression, Web-to page for easy printing of webpages, Epson Photo sharing website link, Epson Craft projects link

Options: Ethernet networking options

CyberPower

AVR SERIES

CP1500AVRT

The CP1500AVRT UPS system offers significant energy savings, battery backup and surge protection for entry level PCs, office workstations and small office networks.

KEY FEATURES:

- 1500VA / 900W Simulated sine wave
- Line-Interactive Topology
- AVR & GreenPower UPS™
- Tower Form Factor
- RJ11/RJ45 & Coax RG6 Protection
- 8 Outlets / USB & Serial ports
- EMI/RFI filters
- PowerPanel® Personal Edition

Runtimes:
3 Minutes at Full-load
11 Minutes at Half-load

DESIGNED FOR:

- Workstations/PCs
- CAD/CAM Workstations
- Home Office/Small Office Networks
- POS Terminals, VoIP Systems
- Surveillance & Security Systems

ENERGY-SAVING TECHNOLOGY

CyberPower's patented GreenPower UPS™ technology reduces UPS energy costs up to 75%! Save money and help reduce carbon emissions.

CyberPower Systems, Inc.
4241 12th Ave. E. Suite 400
Shakopee, MN 55379
Toll-free 877.297.6937
CPSww.com

The CyberPower AVR Series CP1500AVRT uninterruptible power supply (UPS) safeguards mid- to upper-level office workstations, networks and home entertainment systems against surges, spikes, sags, and brownouts, protecting equipment and valuable data during a power outage. Its automatic voltage regulation (AVR) monitors incoming AC power and maintains a safe voltage level. Patented GreenPower UPS™ advanced circuitry reduces UPS energy costs up to 75% compared to competitive models.

The CP1500AVRT unit has a capacity of 1500VA/900Watts, eight (8) NEMA 5-15R receptacles, widely-spaced to accommodate transformer-based plugs. Its sleek tower design allows for placement on the floor, inside a workstation cabinet, or directly on the desktop. This UPS has two (2) maintenance-free, user-replaceable 12V/8.5Ah batteries and offers connectivity via one (1) HID USB and one (1) DB9 serial port. Protection for phone/network (RJ11/RJ45) and cable/coax (RG-6) is included. EMI/RFI filters increase the immunity of the load to noise disturbances. PowerPanel® Personal Edition Smart Management software is included to monitor the vitals of the UPS and safely shut down the system in case of a power outage.

FEATURES & BENEFITS:

Energy-Saving Technology: Patented GreenPower UPS™ advanced circuitry reduces UPS energy costs by up to 75% compared to competitive models.

Automatic Voltage Regulation: AVR boosts the AC power and maintains a safe voltage level without switching to battery-mode, conserving battery life and delivering a cleaner signal to connected equipment.

Ultra-Quiet Operation: Lowest sound emissions of any UPS in its class.

EMI/RFI Filters: Filters against electromagnetic interference and radio frequency interference ensuring clean power for connected equipment.

Transformer-Spaced Outlets: Widely-spaced outlets accommodate large transformer-based plugs without compromising the utility of other outlets.

USB Connectivity: HID compliant USB port enables full integration with built-in power management and auto shutdown features of Windows, Linux and Mac OS X.

LED Indicators: LED status lights indicate Power-On and wiring faults.

Audible Alarms: Distinctive tones identify when the unit is running on battery power, if it is overloaded or when the battery is low.

Resettable Circuit Breaker: Convenient unit reset switch in case of an overload.

PowerPanel® Personal Edition: In event of a power outage, PowerPanel PE saves open files and "hibernates" the PC to increase the run-time on the UPS unit. PowerPanel is easily installed on any Windows-based PC and uses minimal system resources. Diagnostic screens display the status of the UPS, including silent operation mode, configurable system notifications, automatic self tests, adjustable high/low voltage warnings, event/data logging, and scheduled shutdowns.

Technical Support: CyberPower assists users with any product, installation, or warranty concerns—free of charge.

3-Year Warranty: Stringent manufacturing processes and innovative product design enables CyberPower to offer one of the strongest warranties in our industry. CyberPower will repair or replace damaged units within three (3) years of purchase date.

ISO & Safety Certifications: All CyberPower manufacturing facilities are state-of-the-art and ISO-9001 Quality Tested. Our products are certified by the FCC, cUL, and UL.

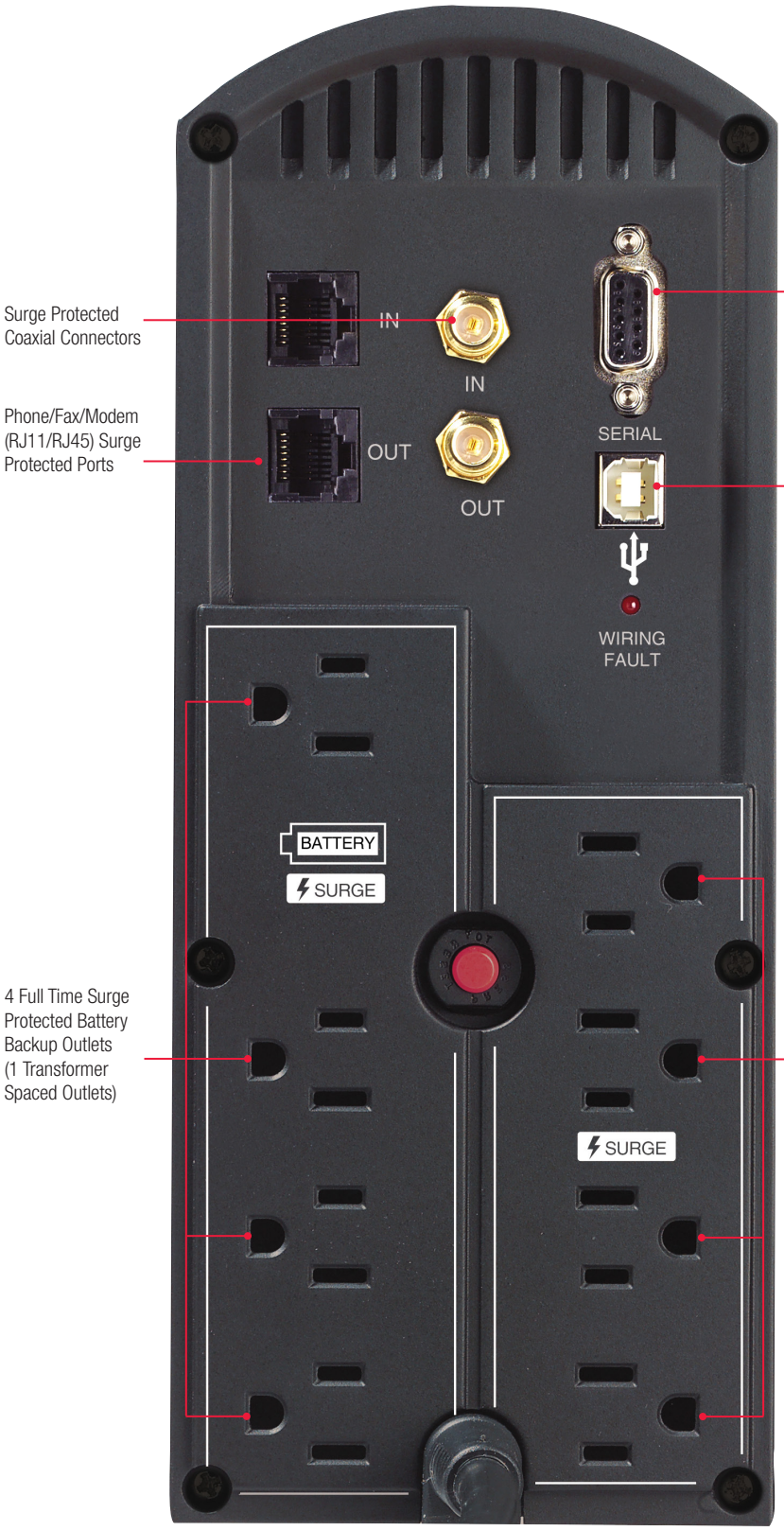
Windows Compatibility: Our PowerPanel® power management software has been fully tested and is compatible with Windows 2000, 2003, XP 32/64, Vista 32/64, 7, and Server 2008.

CyberPower

AVR SERIES

CP1500AVRT SPECIFICATIONS

GENERAL	
UPS Topology	Line-Interactive (AVR)
Energy Saving	GreenPower UPS™ Bypass Technology
INPUT	
Voltage	88Vac - 140Vac
Frequency	60Hz +/- 3Hz
Plug Type	NEMA 5-15P
Plug Style	Right angle
Cord Length	6'
OUTPUT	
VA	1500
Watts	900
On Battery Voltage	120Vac +/- 5%
On Battery Frequency	60Hz
On Battery Waveform	Simulated Sine Wave
Outlets - Total	8
Outlet Type	NEMA 5-15R
Outlets - Battery & Surge Protected	4
Outlets - Surge-Only Protected	4
Outlets - Widely Spaced	1
BATTERY	
Runtime at Half Load (min.)	11
Runtime at Full Load (min.)	3
Battery Type	Sealed lead acid
Battery Size	12V/9AH
User Replaceable	Yes
Typical Recharge Time	18 Hours
Replacement Battery	BB Battery - HR1234W
Battery Quantity	2
SURGE PROTECTION & FILTERING	
Surge Suppression	1,500 Joules
Phone / Ethernet RJ11 / RJ45	1-In, 1-Out (Combo)
Coax Protection RG6	1-In, 1-Out
EMI/RFI Filtration	Yes
MANAGEMENT & COMMUNICATIONS	
HID Compliant USB Port	Yes
Serial Port	Yes
Management Cable	USB cable
LED Indicators	Power on, wiring fault, using battery, AVR, overload
Audible Alarms	On battery, low battery, overload
Software	PowerPanel® Personal Edition
PHYSICAL	
Dimensions (WxHxD)	4" x 9.75" x 13.25"
Weight (lbs.)	25
CERTIFICATIONS	
Certifications	UL1778, cUL 107.1, FCC DOC Class B
RoHS Compliant	Yes
WARRANTY	
Product Warranty	3 Years Limited
Connected Equipment Guarantee	Lifetime
CEG Amount	$500,000



CyberPower Systems, Inc. designs and manufactures state-of-the-art power protection and distribution equipment for corporate, business, home, government and educational markets. CyberPower leads the industry by surpassing customer expectations in the development, design, construction, durability and functionality of uninterruptible power supply (UPS) products for computers, peripherals and connected devices. CyberPower Systems operates in the Asian Pacific, North American, and European markets. For additional information, including sales office locations and authorized reseller partners, visit **CPSww.com**.

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Dell PowerEdge T110 II

The Dell™ PowerEdge™ T110 II is an ideal first server for small businesses with the right combination of value, reliability, collaboration and data protection features to improve your business continuity and productivity.

Business value

The PowerEdge T110 II was designed to meet the needs of your small business environment—customizable with your choice of hard drives for important data, RAID options for added data protection and basic systems management for easy system monitoring. The PowerEdge T110 II provides you with the performance and features you need so you can focus on running your business.

Easy access

Run applications, share information or access your data from any workstation in the office and let employees work collaboratively by moving to a server-based network.

Adding a server to your business gives you the ability to connect with collaboration suites to meet and share documents or desktops over the Internet, deliver instant messages, make calls over the Internet and share desktops during conference calls—all without adding an IT staff.

The PowerEdge T110 II is ideally suited to give your business the flexibility and access you and your employees need to get more done.

Secure technology

Keep data secure and control file access with built-in encryption, security and data protection options. When coupled with the latest version of Microsoft® Windows® Small Business Server 2011 (SBS 2011), the PowerEdge T110 II delivers an integrated solution that can further protect your data by providing automatic backup and restore functionality as well as email, remote access and collaboration to help take your business to the next level.

With the PowerEdge T110 II, you can:

- Avoid costly business interruptions and potentially catastrophic security breaches with hardware-enabled advanced security and encryption features.
- Make copies of data automatically to prevent downtime in the event of a hard drive failure on Dell PowerEdge servers using a RAID configuration.
- Protect your files with the Microsoft Windows Small Business Server 2011 standard backup features that let you restore files and recover data, including automatic backups on PowerEdge servers.

Business friendly

Scalable, adaptable and ready to use, PowerEdge T110 II is the ideal server for the small office setting and is poised to grow along with your business.

- Meet the needs of noise-sensitive environments, thanks to a design that gives you business-class performance with the same sound levels as a standard desktop computer.
- Get the processing power your business demands with options from the Intel Xeon® processor E3-1200 product family, Intel Xeon® processor E3-1200 V2 product family, Intel Pentium® G600 and G800 series, or Intel Celeron® G400 and G500 series.
- Choose processor options and memory configurations that are balanced to run typical business applications, including Microsoft Windows Small Business Server, SQL Server® Workgroup/Standard, Active Directory, SharePoint® server and file and print.

Ideal for collaboration, file sharing, and data protection, the T110 II is an ideal first server for small businesses.

PowerEdge T110 II	PowerEdge T110 II Chassis with Cabled 4x3.5 Hard Drives
Processor	Intel Xeon E3-1220v2 3.10 GHz, 8M Cache, Turbo, Quad Core/4T (69W)
Memory	8GB Memory (2x4GB), 1333MHz, Dual Ranked UDIMM (speed is CPU dependent)
Operating System	Windows Server® 2012,Standard Ed,Factory Install,No MED,2 Socket,2 VMs
Enterprise Software Licensing	None
Optional Virtualization Software	None
OS Media kits	Windows Server® 2012, Standard Edition, Media Kit
Enabled Virtualization	None
Hard Drive Configuration	Onboard SATA, 1-4 Hard Drives connected to onboard SATA Controller -No RAID
Internal Controller	No Controller
External Controller	None
Hard Drives (Multi-Select)	1TB 7.2K RPM SATA 3Gbps 3.5in Cabled Hard Drive
Network Adapter	On-Board Single Gigabit Network Adapter
Power Cords	NEMA 5-15P to C13 Wall Plug, 125 Volt, 15 AMP, 10 Feet (3m), Power Cord

STORAGE BACKUP OPTIONS

Removable Disks and Tape Drives	None
Advanced Data Protection Software	None
Backup Software	None
Backup Media	None

SYSTEMS MANAGEMENT

Embedded Management	Baseboard Management Controller
Systems Management Upgrades	None
Systems Management	None

OTHER OPTIONS

Internal Optical Drive	DVD Drive, Internal
Server Accessories	Keyboard and Optical Mouse, USB, Black, English
System Documentation	Edocs and OpenManage DVD
OS and SW Client Access Licenses	None

SERVICE OPTIONS

Hardware Support Services	3Yr Basic HW Warranty Repair with SATA Ext: 5x10 HW-Only, 5x10 NBD Onsite
Proactive Systems Management	None
Data Protection Offers	None
Installation Services	No Installation
Proactive Maintenance	Maintenance Declined
Asset Tag on System	None

Chassis (CFI)

Asset Recovery Services	None

ASUS – VH242H Display

Specifications

TFT-LCD Panel	**Panel Size:** 23.6“ Wide Screen **True Resolution:** 1920X1080 **Pixel Pitch:** 0.272mm **Brightness(Max):** 300 cd/㎡ **Contrast Ratio (Max.):** 20000 :1 (ASCR) **Display Color:** 16.7M **Viewing Angle (CR≧10):** 170°(H)/160°(V) **Response Time:** 5 ms
Video Features	SPLENDID Video Intelligence Technology SPLENDID Video Preset Modes (5 modes) Skin-Tone Selection (3 mode) HDCP support Color Temperature Selection(5 modes)
Audio Features	Stereo Speakers 2Wx2 stereo RMS
Convenient Hotkey	SPLENDID Video Preset Mode Selection Auto. Adjustment Brightness Adjustment Volume Adjustment Input Selection
Input / Output	**PC Input:** DVI-D/D-Sub **PC Audio Input:** 3.5mm Mini-jack **Video Input:** HDMI **AV Audio Input:** HDMI **Audio Output:** SPDIF **Earphone jack:** 3.5mm Mini-jack
Signal Frequency	**Analog Signal Frequency:** 30 ~ 83 KHz(H)/50 ~ 75 Hz(V) **Digital Signal Frequency:** 30 ~ 83 KHz(H)/50 ~ 75 Hz(V)
Power Consumption	Power Consumption < 55 W Power Saving Mode < 2 W
Mechanical Design	**Chassis Colors:** Black **Tilt:** +20°~ -5° **VESA Wall Mounting:** 100x100mm
Security	Kensington lock
Dimension (WxHxD	Phys.Dimension(WxHxD): 562mm x 416mm x 220mm

mm)	Box Dimension(WxHxD): 638mm x 171mm x 491mm
Weight	Net Weight (Esti.): 5.8 kg Gross Weight (Esti.): 8.2 kg
Accessory	DVI cable VGA cable Audio cable Power cord Quick start guide support CD warranty card
Regulation Approval	UL/cUL, CB, CE, FCC, CCC, BSMI, Gost-R, C-Tick, VCCI, PSB, J-MOSS, RoHS, WEEE, WHQL

Submittals

Energy Management Automation
System Base
MCPS, EMS Main
8900
Shady Grove Maint. Depot/PLAR Office -
16651 Crabbs Maint. Depot/PLAR Office -
16651 Crabbs Branch Wat
Rockville MD 20855-

SECTION 7 Control Drawings

(6)

NA-SW-ARCHIVE	Rc-Archive 3.0	
	1	RC-AR3-M (1)
Reliable Controls Corp.		
RC-AR3-S5000		
0	Not Rqrd / No Jumper	NO DETAIL
NA	No Range	No SW Config
Software shall be installed and configured for operation on SERVER. Includes (1) hardcopy user manual.		No Channel

(5)

NA-SW-STUDIO	Rc-Studio 2.0	
	1	RC-ST2-M (1)
Reliable Controls Corp.		
RC-ST2-1		
0	Not Rqrd / No Jumper	NO DETAIL
NA	No Pnt Lmt	No SW Config
Software shall be installed and configured for operation on SERVER. Includes (1) hardcopy user manual.		No Channel

(4)

NA-DISPLAY	Computer Monitor	
	1	No Acc.
Asus		
VH242H		
0	Not Rqrd / No Jumper	NO DETAIL
NA	No Range	No SW Config
No Installation Notes		No Channel

(3)

NA-SERVER	Control System Server	
	1	No Acc.
Dell		
T110 II		
0	Not Rqrd / No Jumper	NO DETAIL
NA	No Range	No SW Config
No Installation Notes		No Channel

(2)

NA-PRINTER	Color Inkjet Printer	
	1	No Acc.
Epson		
C88+		
0	Not Rqrd / No Jumper	NO DETAIL
NA	No Range	No SW Config
No Installation Notes		No Channel

(1)

NA-UPS	Uninterruptible Power Source	
	1	No Acc.
Cyber Power		
CP1500AVRT		
0	Not Rqrd / No Jumper	NO DETAIL
NA	No Range	No SW Config
No Installation Notes		No Channel

Network Architecture

- Typical of 1 system(s)
- NA

DRAWN BY: JVF
APPRVD BY:
SUBMITTAL DATE: 12/04/12
AS BUILT:

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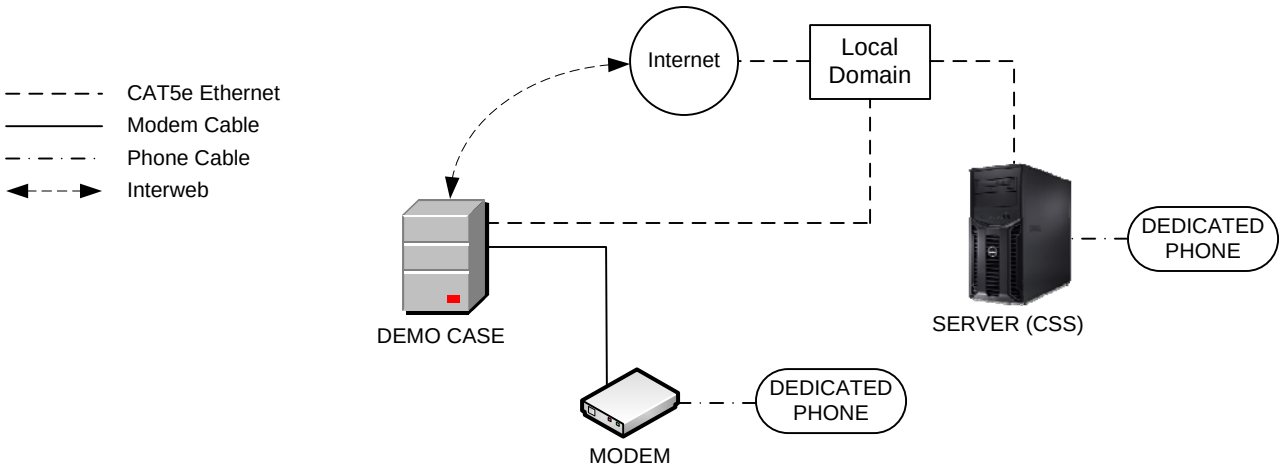
Edited: 12/4/2012 9:11 AM Printed: 12/4/2012 9:12 AM

REV1:
REV2:
REV3:
REV4:

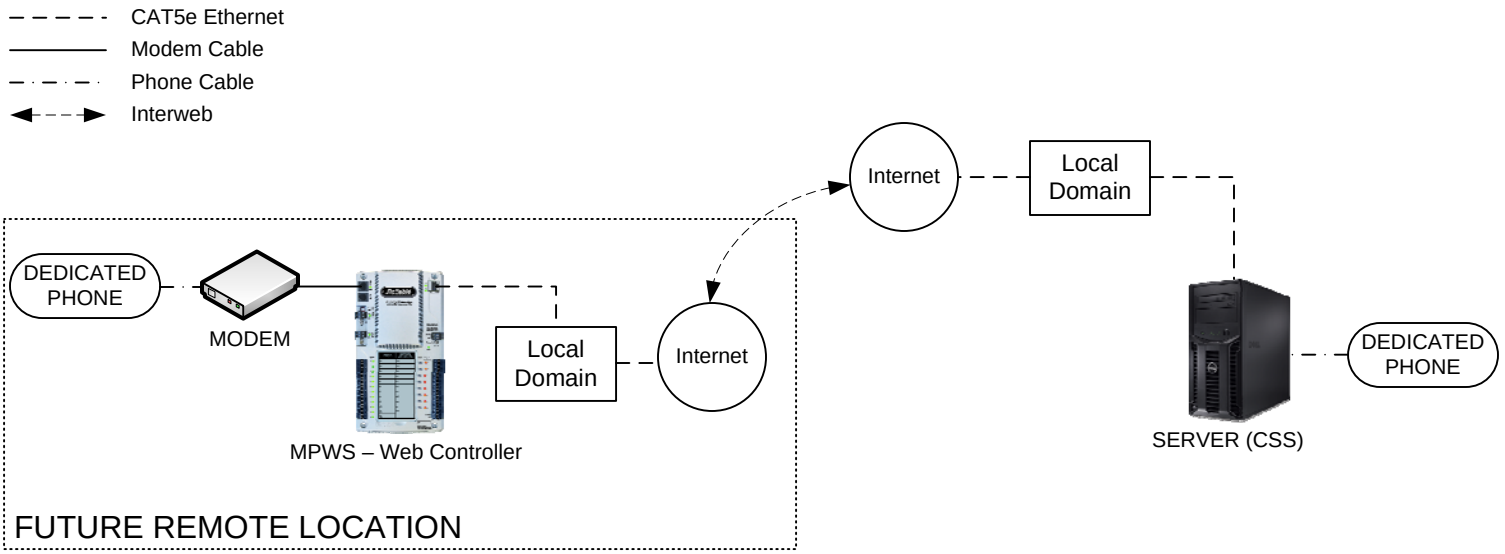
BUILDING AUTOMATION SERVICES, INC.

JOB # 8900

MCPS, EMS Main



TESTING ENVIRONMENT
NETWORK ARCHITECTURE



PERMANENT NETWORK
ARCHITECTURE

NETWORK ADDRESSING			
Device	**RCP**	**Device ID**	**IP**
CSS	NA	########	XXX-XXX-XXX-XXX

Network Architecture

- Typical of 1 system(s)
- NA

DRAWN BY: JVF
APPRVD BY:
SUBMITTAL DATE: 12/04/12
AS BUILT:

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REV1:
REV2:
REV3:
REV4:

BUILDING AUTOMATION SERVICES, INC.

JOB # 8900

MCPS, EMS Main